

REMARKS

I. The Claims

Claim 1 has been amended. Claims 21-24 are new. Support for the subject matter of the new and amended claims may be found in the specification at, for example, paragraphs [0012] and [0022].

II. The Restriction Requirement

In the Office Action, the Examiner asserts that the application contains claims directed to the following patentably distinct species: (a) the epoxy resins and lactones comprising the compound, (b) the film-forming resins, and (c) the crosslinkers. See Office Action at 2.

Applicants affirm their provisional election to select the species wherein (i) the epoxy resin is the reaction product of Epon 1009 epoxy resin and ϵ -caprolactone, (ii) the film-forming resin is the hydroxy-functional polyester of claim 14, and (iii) the crosslinker is the ϵ -caprolactam-blocked isophorone diisocyanate exhibited in Table A.

III. The Rejections of Claims 1-20

A. The Rejection of Claims 1-15 and 17-20 Under 35 U.S.C. §103(a) over Watanabe and Nakamura

The Examiner rejects claims 1-15 and 17-20 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 4,522,984 ("Watanabe") and United States Patent No. 5,037,899 ("Nakamura"). These rejections are based on the Examiner's assertion that "[t]he lactone-modified epoxy resins of Watanabe et al. and Nakamura et al. fall within both the hydroxyl group-containing epoxy resin/lactone reaction product of claimed component (a) and film-forming resin (b) since the lactone-modified epoxy resin provides a film upon cure." See Office Action at 4. As a result, the Examiner's position appears to be that any mention in a reference of a lactone-modified epoxy resin constitutes an anticipation of both components (a) and (b) of the pending claims. Applicants respectfully disagree with this interpretation of the claims for the following reasons.

During patent examination, the pending claims must be give their broadest reasonable interpretation consistent with the specification. See MPEP 2111 (citing *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (emphasis added)); see also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) ("PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification") (emphasis added).

In this case, Applicants respectfully assert that the Examiner's interpretation of the claims is inconsistent with the specification. In particular, Applicants refer the Examiner to the last three sentences of paragraph [0024] of the specification, wherein Applicants state:

It will be further appreciated that the polymer additives or comb polymers used in the powder coatings of the present invention are used in additive quantities. That is, they are not used in quantities sufficient to form a film themselves; an additional quantity of a separate film-forming resin should be used in sufficient quantity to form a film. Thus, the "film-forming resin" as used herein does not refer to the comb polymer.

(emphasis added).

As a result, Applicants made clear in the specification that components (a) and (b) of claim 1 are not one and the same. Instead, the film-forming resin is a separate component of the claimed powder coating composition and does not refer to the comb polymer.

In view of this claim interpretation, Applicants respectfully traverse the rejection of claims 1-15 and 17-20 under 35 USC 103(a) over Watanabe and Nakamura. In particular, neither of these references discloses or suggests any curable powder coating composition comprising the combination of: (a) a compound that comprises the reaction product of an epoxy resin having at least one hydroxyl group and a lactone; (b) a separate film-forming resin that is not the compound (a); and (c) a crosslinker.

As indicated in the present application, the inclusion of the additive (a) in combination with a separate film-forming resin in a curable powder coating composition can result in at least one improvement to the performance characteristics of such compositions, such as improved flow and/or improved leveling, decreased gassing, increased flexibility, and/or improved appearance. See [0023]. There is no disclosure or suggestion in Watanabe or Nakamura that

such a compound could be used in a curable powder coating composition in combination with a separate film-forming resin to achieve such results.

As a result, Applicants respectfully request withdrawal of the rejection of claim 1-15 and 17-20 in view of Watanabe and Nakamura.

B. The Rejection of Claims 1-20 Under 35 U.S.C. §103(a) over GB 1,523,903 in view of Watanabe and Nakamura

The Examiner rejects claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over GB 1,523,903 ("the British patent") in view of Watanabe and Nakamura. In particular, the Examiner asserts that it would have been obvious to include the lactone-modified epoxy resins of Watanabe and Nakamura in the powder coating of the British patent in order to increase the flexibility and improve the heat and water resistance, low temperature properties and miscibility. See Office Action at 6. Applicants respectfully traverse this rejection for the following reasons.

In this Amendment, Applicants amend claim 1 to specify that the reaction product of the epoxy resin having at least one hydroxyl group and the lactone has a melting temperature in the range of about 40 to about 65°C. The British patent, conversely, states that epoxy resins having a melting point below 70°C should not be used. See p. 3, lines 5-7. As a result, a person skilled in the art, upon reading the British patent, would be led in a direction divergent from the path taken by Applicants. Accordingly, the Examiner has not, and cannot, establish a *prima facie* case of obviousness with respect to claim 1, as amended herein, over the British patent in view of Watanabe and Nakamura. See MPEP 2141.02. As a result, Applicants respectfully request withdrawal of the pending rejections of claims 1-20 over the British patent in view of Watanabe and Nakamura.

C. The Rejection of Claims 1-20 Under 35 U.S.C. §103(a) over JP 53-58536 in view of Watanabe and Nakamura

The Examiner also rejects claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over JP 53-58536 ("the Japanese patent") in view of Watanabe and Nakamura. In particular, the Examiner asserts that it would have been obvious to include the lactone-modified epoxy resins of Watanabe and Nakamura in the powder coating of the Japanese patent in order to increase the flexibility and improve the heat and water resistance, low temperature properties

and miscibility. See Office Action at 6. Applicants respectfully traverse this rejection for the following reasons.

The Japanese patent describes a powder coating composition consisting of: (1) 50-95 wt % of polyester having an abundance of hydroxyl groups; (2) 0.5-30 wt% of a polyester with an abundance of carboxyl groups; (3) 3-40 wt% of a blocked polyisocyanate; and (4) 0.5-20 wt% of an epoxy resin. See Japanese Patent at p. 2.¹ The epoxy resin is the component that reacts with the carboxyl groups in the polyester resin and has an average functionality of two or more epoxy groups per molecule. See Japanese Patent at p. 3. As a result, in the Japanese reference, the epoxy resin acts as a crosslinker with the carboxy functional polyester to form a crosslinked network. A second crosslinked network is formed from the reaction of the blocked polyisocyanate with the hydroxy functional polyester. Thus, the result is two crosslinked networks.

By contrast to the Japanese patent, in the present invention, the reaction product of the epoxy resin having at least one hydroxyl group and a lactone inherently results in an epoxy resin having an average of less than two epoxy groups per molecule. This is because, during reaction of the epoxy resin with the lactone, some of the epoxy groups are consumed. This is confirmed by the test results included in the attached declaration of Michael Ziegler, which indicates that the reaction product has only about 60% of the epoxy groups that would otherwise exist if none of the epoxy groups were consumed. See Ziegler Declaration at ¶ 3. Thus, contrary to the epoxy resin in the Japanese patent, the reaction product of the epoxy resin and the lactone in the present invention results in a polymer that has an average of less than two epoxy groups per molecule. *Id.* Because of this, one skilled in the art would not have been motivated to use the comb polymer of the present invention as a crosslinker for the carboxy functional polyester described in the Japanese patent because of the reduced crosslink density associated with the use of an epoxy resin with fewer than two reactive groups per chain. *Id.* at ¶ 4. Reduced crosslinking density may result in poor physical properties especially hardness, solvent resistance, and flexibility, which is directly contrary to the goals of the composition described in the Japanese patent. *Id.*

¹ A translation of the Japanese patent is attached to this Amendment.

Accordingly, the Examiner has not, and cannot, establish a *prima facie* case of obviousness with respect to claim 1, as amended herein, over the Japanese patent in view of Watanabe and Nakamura. See MPEP 2141.02. As a result, Applicants respectfully request withdrawal of the pending rejections of claims 1-20 over the Japanese patent in view of Watanabe and Nakamura.

IV. New Claims 21-24

A. Claims 21 and 23

New claims 21 and 23 recite that the epoxy equivalent weight of the compound (a) is 10,000 to 150,000. Neither Watanabe nor Nakamura disclose such a compound. In fact, Example 1 of Watanabe, cited by the Examiner, had an epoxy equivalent weight of 3070, whereas Nakamura states that the modified epoxy resins described therein have an epoxy equivalent of 600 to 2,500. See Watanabe at col. 10, line 30 and Nakamura at col. 5, lines 4-5. Thus, even if one were to combine the teachings of the British patent and/or the Japanese patent with Watanabe and/or Nakamura, the resulting combination would not disclose each and every element of new claim 21 or 23. Thus, these claims are independently patentable over the cited references for this reason.

B. Claims 22 and 24

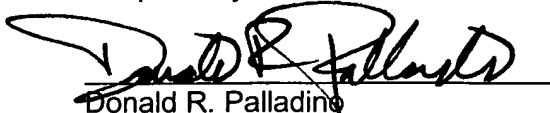
New claims 22 and 24 recite that the epoxy resin is not chain extended by reaction of the terminal oxirane groups with amines. This is contrary to both Watanabe and Nakamura, wherein the epoxy resin is in fact reacted with an amine. See, e.g., Watanabe at col. 8, line 38-43 and Nakamura at col. 2, lines 58-61. Thus, even if one were to combine the teachings of the British patent and/or the Japanese patent with Watanabe and/or Nakamura, the resulting combination would not disclose each and every element of new claim 22 or 24. Thus, these claims are also independently patentable over the cited references for this reason.

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Attorney Docket No. 1923A1

CONCLUSION

Applicants respectfully request entry of the foregoing amendment and allowance of the application at an early date.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Donald R. Palladino", is written over a horizontal line.

Donald R. Palladino
Attorney for Applicants
Registration No.: 46,976

PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272
Telephone: (412) 434-3186
Facsimile: (412) 434-4292

Pittsburgh, Pennsylvania
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